OUR ASTRONOMICAL COLUMN.

ROTATION PERIOD OF VENUS.—A telegram just received from Herr Backlund, through the Centralstelle at Kiel, reads as follows:—"From four spectrograms Belopolsky has been able to confirm the *short* rotation period of Venus."

ELLIPTIC ELEMENTS OF THE VARIABLE Y CYGNI.—Prof. N. C. Dunér, of Upsala, has computed the elliptic elements of the Algol Variable Y Cygni, and gives his results with a derived ephemeris in the *Astronomische Nachrichten*, Bd. 152, No. 3633.

Elements of Y Cygni.

Epoch	$t_0 = 1885{\cdot}0 + 342{\cdot}8930d.$
Anomalistic motion of apse line ..	$\omega = 0^\circ{\cdot}035928$
Eccentricity	$e = 0^\circ{\cdot}14535$
Anomalistic revolution	$U - 2{\cdot}996933d.$
Semi-major axis	$A - 8{\cdot}0$

PHOTOMETRIC OBSERVATIONS OF MERCURY DURING SOLAR ECLIPSES.—Dr. G. Müller, of Potsdam, has for some years made systematic measurements of the brightness of the planet Mercury for phase-angles varying from 50° to 120°. No observations could be made nearer than 50° from the sun. From his results, he finds that the relation giving the light-curve of Mercury is almost identical with that obtained by other workers in the case of the moon. This similarity could be very severely tested if the brightness of the planet could be determined directly at the phase-angles from 0° to 50°. In the *Astrophysical Journal* xi. pp. 144–147, he suggests that an excellent opportunity to carry out this work will be presented during the coming total eclipse in May 1900. The phase-angle for Mercury at the time of the eclipse will be about 7°, and its angular distance from the sun about 2°.

Venus will be the most suitable object for comparison, being about 40′ east of the sun at the time of the eclipse, with a phase-angle of 113°. It will be advisable to use small objectives of very short focus, so that the images of the planets may appear as practically points of light; it is also desirable to employ only those photometers with which (as is the case of Zöllner's) the effect of the different brightness of sky background is eliminated.

VARIATION OF LATITUDE.—Prof. Th. Albrecht, of Potsdam, gives a *résumé* in the *Astronomische Nachrichten*, Bd. 152, No. 3633, of his continued discussion of the results obtained at various stations for the motion of the earth's pole. The observations have been made at the following stations:—Tokyo, Kasan, Moscow, Pulkowa, Prague, Potsdam, Lyons, New York, Philadelphia and Washington, during various periods extending from 1892·3 to 1899·9. The co-ordinates of the pole as deduced from these new results are plotted in continuation of Prof. Albrecht's former curve. During the period 1895·0 to 1895·6, the motion appears from the curve to have been in the opposite direction to that followed since, although several complete revolutions have taken place.

PLANETARY WORK AT THE MANORA OBSERVATORY.—Herr Leo Brenner communicates to the *Naturwissenschaftliche Wochenschrift*, Bd. xv. No. 13, pp. 145–150, his report of the work done at the Manora Observatory during the past year. Besides the drawings of the planetary markings, which is the chief undertaking of the institution, the scope of routine work included observations of the sun, zodiacal light, double stars and meteors. The report is illustrated by twenty-eight reproductions of drawings of the planets Mars, Jupiter and Saturn, showing the various markings mentioned in the text. The spots on the ball of Saturn appear to have been continually seen.

THE DEVELOPMENT OF ASTRONOMY IN AMERICA.

SIXTY years ago the United States had scarcely a single observatory properly equipped for the pursuit of astronomical studies. To-day that country is possessed of the finest observatories in the world, manned by observers of the greatest skill, who devote themselves untiringly to the advancement of the oldest of the sciences.

The success of the American astronomers during this short period has been remarkable. To them we owe important discoveries and precious records in nearly every branch of theoretical and practical astronomy, and especially of late years in the department of astronomical physics. It is impossible here to recount the whole fruits of their labours, but it is worth while to recall a few of the results which we owe to their industry.

The first striking discovery in America was that of Hyperion, the seventh satellite of Saturn, by G. P. Bond, in 1848. In the same line of work, Hall was rewarded in 1877 by the discovery of the tiny satellites of Mars, and more recently Barnard astonished the world by his detection of the fifth satellite of Jupiter, while Pickering claims to have established the existence of a ninth satellite of Saturn. In planetary studies generally, the Americans have been well to the front, and we have seen the unusual spectacle of a powerful refractor primarily devoted with marked success, by Mr. Lowell, to the delineation of the surfaces of our nearest planetary neighbours. Numerous measurements of the dimensions of the various members of the solar system have also been made, and the theory of their motions has been greatly advanced, notably by the well-known investigations of Newcomb.

Cometary astronomy has likewise benefited by their zeal, many new discoveries having been made, and the orbits of a large number calculated; in this branch the Americans are now more active than ever, no less than six of the seven new comets discovered in 1898 being to their credit. Important investigations relating to meteorites and the orbits of meteor swarms have also been carried out, and the name of Prof. H. A. Newton will always be associated with this department of astronomical research.

Sidereal astronomy has been enriched by numerous star catalogues, and double-star observation has been brought to a high standard of perfection by the assiduous efforts of Burnham, Hall and See; while Pickering's "Harvard Photometry" has given us an invaluable record of the magnitudes of thousands of the brighter stars. The study of variable stars has also been very productive, our most important catalogue of these objects being due to Chandler, while a unique atlas of variable stars is in course of publication by Prof. Hagen; here, as in many other directions, Prof. Pickering's ingenuity has been displayed, and he has shown among other things how variables of short period can be readily detected, and the changes studied, by photographic means.

Our catalogues of nebulæ discovered since the time of the Herschels include a large number of entries to the credit of American observers, Lewis Swift having specially distinguished himself in this field of work.

Notable work has also been done in the domain of solar physics. Young's observations of the chromospheric spectrum have only been surpassed by the most recent eclipse photographs, and Prof. Hale was the first to initiate a regular photographic record of the forms of the chromosphere and prominences. Quite recently, the great telescope of the Yerkes Observatory has been used for a very detailed examination of the spectrum of the chromosphere, and even the most minute structure of the carbon flutings in the green has been successfully observed. To Prof. Rowland we owe a great catalogue of close upon twenty thousand of the Fraunhofer lines, the positions of which are stated with a degree of accuracy never before attempted; and physicists and astronomers throughout the world are indebted to this observer for the magnificent diffraction gratings which his skill has placed at their disposal. By the invention of the bolometer, Langley has opened up a new region of the spectrum, and has made numerous important observations by its aid. At the present time a committee of American astronomers is organising the work to be undertaken during the total eclipse of the sun next May, and from a preliminary report which has been issued we gather that they are fully alive to the opportunities which such an event affords.

Astronomy owes an immense debt to photography, and it should not be forgotten that the first photographic impression of a star was obtained on the other side of the Atlantic, by Prof. Bond, in 1850. Among those who early recognised the possibilities of astronomical photography was Rutherfurd, of New York, who obtained numerous pictures of the sun, moon and stars in the early seventies, the full value of which has only lately begun to appear. It was there also that Dr. Draper, in 1872, secured the first photograph of a stellar spectrum which revealed anything relating to the composition of a star, and that Barnard, in 1892, made the first discovery of a comet by the aid of the camera.

The story, however, by no means ends with this pioneer work; celestial photography has been pursued with the